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# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

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### Division of Oil, Gas and Mining

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Division Director

April 21, 2010

Mark Reynolds  
Great Salt Lake Minerals Corp.  
765 North 10500 West  
Ogden, Utah 84404

Subject: Initial Review of Consolidated Notice of Intention to Commence Large Mining Operations, Great Salt Lake Minerals Corporation, GSL Mine, M/057/0002., Weber County, Utah

Dear Mr. Reynolds:

The Division of Oil, Gas and Mining has completed a review of your Consolidated Notice of Intention to Commence Large Mining Operations for the GSL Mine. We appreciate the work you have done to consolidate the plan and believe this will benefit both you and the Division. Our understanding is that this submittal was to consolidate all previous amendments/revisions in to a single, comprehensive document that would be the basis for future amendments and revisions. While your operations are permitted, the review comments identify areas of the consolidated NOI that need to be addressed to bring the plan up to standard. These issues will need to be resolved prior to approval of future amendments/revisions.

The comments are listed under the applicable Minerals Rule heading; please format your response in a similar fashion. Please address only those items requested in the attached technical review by sending replacement pages of the original mining notice using redline and strikeout text, so we can see what changes have been made. After the notice is determined technically complete, we will ask that you send us two clean copies of the complete and corrected plan. These will be stamped "Approved" and one copy will be returned for your records.

If you have any questions in this regard please contact me at 801-538-5261 or Lynn Kunzler, at 801-538-5310. Thank you for your cooperation in completing this permitting action.

Sincerely,

Paul B. Baker  
Minerals Program Manager

PBB:lk:vs  
Attachment: Review  
cc: Dave Grierson, Forestry, Fire and State Lands  
P:\GROUPS\MINERALS\WP\M057-Weber\M0570002-GSL\Final\Rev1-3085-03032010.doc





**INITIAL REVIEW OF NOTICE OF INTENTION  
TO COMMENCE LARGE MINING OPERATIONS**

**Great Salt Lake Minerals, Corporation  
GSL Mine**

**M/057/0002  
April 21, 2010**

**General Comments:**

Comment #	Sheet/Page/Map/Table #	Comments
1		<p>Comments below were derived from the review of the revised NOI, and not from the original NOI, lease agreements, etc.</p> <p>A general comment regarding maps: All maps need to have a legend, scale, and north arrow. Maps of facility areas need to be of sufficient scale to measure the size of facilities, buildings, etc. Maps need to show all areas being affected or utilized by GSL. Reclamation maps need to identify areas that will receive different reclamation treatments, and identify the acreage for each treatment. A map needs to be provided that identifies the pre-1983 facilities that are part of the approved variance.</p>

**R647-4-104 - Filing Requirements and Review Procedures**

Comment #	Sheet/Page/Map/Table #	Comments
2	Page 6	The mine name is identified as 'Great Salt Lake Minerals Corporation'. Are you intending to change the name of the operation with this submittal from the current "GSL Mine?" If not, please correct the mine name.

**R647-4-105 - Maps, Drawings & Photographs**

**General Map Comments**

Comment #	Sheet/Page/Map/Table #	Comments
3	Page 13	A map (or maps) is needed that identifies the various reclamation treatments will be used. This would include borrow pits, facility areas, dikes, etc., all of which have different reclamation practices, including those areas for which variances were approved (please refer to comments under R647-4-110.3).

**R647-4-106 - Operation Plan**

**106.3 - Estimated acreages disturbed, reclaimed, annually**

Comment #	Sheet/Page/Map/Table #	Comments
4	Page 15	The table under 106.3 does not include the 185+ acres of borrow pits. Does the 500 acres for associated on-site processing facilities include ore/product stockpiles, access/haul roads, dikes, etc.? These items need to be listed separately.



#### **106.4 - Nature of materials mined, waste and estimated tonnages**

Comment #	Sheet/Page/Map/Table #	Comments
5	Page 16	While it is understood that most of the materials listed do not apply to GSL, please provide a brief description as to why they do not apply. As discussed in the NOI, there are reject salts that are re-dissolved and returned to the lake. What is the estimated annual volume of this reject salt material.?

#### **106.5 - Existing soil types, location, amount**

Comment #	Sheet/Page/Map/Table #	Comments
6	Page 16	The operations have, and will continue to impact soil resources. Topsoil (even a couple of inches) on the borrow areas and facilities area should be salvaged for reclamation. This material needs to be characterized and the estimated volume provided. Locations of topsoil stockpiles need to be provided on maps. Plans to protect the soil resource need to be provided as well. (Note: There is some soil data in the original NOI that needs to be included.)

#### **106.7 - Existing vegetation - species and amount**

Comment #	Sheet/Page/Map/Table #	Comments
7	Page 17	Borrow areas, facility areas, etc. had, or have vegetation. These vegetation communities need to be described. (Note: Vegetation data was included in the original NOI.)

#### **106.8 - Depth to groundwater, extent of overburden, geology**

Comment #	Sheet/Page/Map/Table #	Comments
8	Page 18	Please provide information on the depth to ground water, geology, wells, etc., especially as it relates to the borrow and process facility areas.

#### **106.9 - Location & size of ore, waste, tailings, ponds**

Comment #	Sheet/Page/Map/Table #	Comments
9	Page 18	When salts are harvested from the evaporation ponds, they are stockpiled prior to additional processing. Please show on a map where these stockpiles are located and the estimated volume of material that is put in each stockpile.

### **R647-4-109 - Impact Assessment**

#### **109.1 - Impacts to surface & groundwater systems**

Comment #	Sheet/Page/Map/Table #	Comments
10	Page 18	Impacts to surface and ground water systems need to be described. For example, evaporation impacts surface waters; removal of salts is an impact; flushing reject materials back to the Great Salt Lake is an impact; regrading, paving, etc., impact infiltration and drainage patterns, etc.



### 109.2 - Impacts to threatened & endangered wildlife/habitat

Comment #	Sheet/Page/Map/Table #	Comments
11	Page 18	Brine shrimp and waterfowl both utilize the Great Salt Lake and its shorelines, which have both been impacted by this operation. The NOI states that "this facility is a part of an existing salt water lake which is not conducive to habitation by waterfowl." This statement is inconsistent with the plan to have the State Division of Wildlife Resources take over the dike and pond systems.

### 109.3 - Impacts on existing soils resources

Comment #	Sheet/Page/Map/Table #	Comments
12	Page 18	Soils and vegetation have been impacted by this operation. Even the mud flats are a type of soil, and adding a layer of salt is an impact. The facilities area and borrow areas had vegetation and some soil materials (may not be high quality soils or vegetation, but they still were/are impacted).

### 109.4 - Slope stability, erosion control, air quality, safety

Comment #	Sheet/Page/Map/Table #	Comments
13	Omission	Please discuss impacts due to air quality, dust control, etc.

### 109.5 - Actions to mitigate any impacts

Comment #	Sheet/Page/Map/Table #	Comments
14	Omission	This section of the NOI needs to reference the various actions that are, or will be used to mitigate the impacts to the referenced resources. This may include, but is not limited to, actions taken for reclamation, dust control plans, storm water management plans, discharge, permits, etc.

## **R647-4-110 - Reclamation Plan**

### 110.1 - Current & post mining land use

Comment #	Sheet/Page/Map/Table #	Comments
15	Page 19	Wildlife habitat/use was, is, and will continue to be a significant part of the current and post mining land use of the site. Please include this use.

### 110.2 - Roads, highwalls, slopes, drainages, pits, etc., reclaimed

Comment #	Sheet/Page/Map/Table #	Comments
16	Page 19	Change the reference to the State Fish and Game Commission to the State Division of Wildlife Resources.
17	Page 19	Plans to breach dikes every mile and allow wave action to wash out and level dikes for reclamation may work for the 'in-lake' dikes in Bear River Bay, but is very questionable for dikes above the meander line of the lake. Please provide a more comprehensive reclamation plan to level dikes and roads that are above the meander line of the lake.



Comment #	Sheet/Page/Map/Table #	Comments
18	Page 19	While the Division will not require importing soils for borrow areas where no soils existed, fines can be amended with bio-solids or composted manure to make revegetation practical. Please plan to amend fines with up to 10 ton/acre of bio-solids or composted manure to improve revegetation success.

### 110.3 - Description of facilities to be left (post mining use)

Comment #	Sheet/Page/Map/Table #	Comments
19	Page 19	While the Division granted a variance to leave facilities that existed in March of 1986, the variance is not automatically extended to any new facilities that were, or will be constructed after that date. While the concept to leave structures for post-mining land use is reasonable, there is no guarantee that any of the facilities will be in a condition for, or be desired for other non-mining related at some time in the future. The 1983 variance approval to leave facilities only applies to facilities that existed at that time. The current DOGM practice is to bond for all facilities, and then at the time of reclamation consider the variance to leave these structures. Therefore, it is necessary to provide reclamation plans to raze all structures constructed after 1986 and provide for reclamation/revegetation of the lands involved. Then, at the time of reclamation, if it is demonstrated that certain facilities are needed or have utility for post mining use, the Division can approve at that time to leave those facilities. Therefore, it is necessary to provide a list and description of all facilities constructed post-March 1986 and provide reclamation plans and surety for each of these facilities.

### 110.5 - Revegetation planting program

Comment #	Sheet/Page/Map/Table #	Comments
20	Page 20	Reclamation of 185 acres of borrow areas, and potentially up to 1000 acres of facilities <u>is</u> more than 'minimal revegetation.' Revegetation plans must be provided, including soil replacement (for areas where soils were or can be salvaged (future disturbances), addition of reasonable amendments and/or fertilizer as needed, seedbed preparation, a seed mix which includes grasses, forbs, and shrubs that are adapted to the area(s), and seeding methods.

### R647-4-112 - Variance

Comment #	Sheet/Page/Map/Table #	Comments
21	Page 20	As discussed above, variances approved in 1983 only apply to areas/facilities that were disturbed and described in the original variance request. It is not a blanket variance for future disturbances or facilities. Variances for these must be requested and approved separately. (Refer to comment 19 under R647-4-110.3.)



**R647-4-113 – Surety**

Comment #	Sheet/Page/Map/Table #	Comments
22	Page 20-21	<p>Please provide a breakdown of the reclamation cost estimate. Include equipment needed, volumes, unit costs, etc., for each area and phase of reclamation. Unit costs, need to be verifiable 'third-party' costs, assuming the Division would have to contract the reclamation and not necessarily what it would cost GSL to do the work.</p> <p>The Division has developed standardized bonding worksheets and requests that you use them as a basis for the surety calculation. Please contact Wayne Western at 801-538-5263 for further information.</p>